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THE NATIONAL POULTRY IMPROVEMENT PLAN

COOPERATING IN
The NATIONAL POULTRY IMPROVEMENT PLAN
ADMINISTERED BY OFFICIAL STATE AGENCIES AND U.S. DEPARTMENT OF AGRICULTURE

Emblem authorized for use by official State agencies and industry members to signify cooperation in The National Poultry Improvement Plan

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

The National Poultry Improvement Plan became operative July 1, 1935, with the approval of the Secretary of Agriculture and under the authority of an appropriation made by Congress (Public, No. 62, 74th Cong., H. R. 6718) for the Bureau of Animal Industry, United States Department of Agriculture, to be used in cooperation with State authorities in the administration of regulations for the improvement of poultry, poultry products, and hatcheries.

Developed with a view to the establishment of the poultry-breeding industry on as sound a basis as possible, the plan affords protection from unscrupulous competition and enables purchasers to buy with more confidence. The adoption of the plan in all parts of the United States should bring about an improvement in the quality of hatching eggs, baby chicks, breeding stock, and market products. Such results should cause poultry production to be more efficient and thus aid in making the poultry enterprise more profitable.

The objectives of the National Poultry Improvement Plan are to improve the breeding and production qualities of poultry and to reduce losses from pullorum disease. This is being accomplished by: (1) The development of more effective State poultry-improvement programs; (2) the identification of the quality of breeding stock, hatching eggs, and chicks by authorized terms that are uniform and applicable in all parts of the country; and (3) the establishment of an effective cooperative program through which newer knowledge and practical experience can be applied to the improvement of poultry and poultry products.

Acceptance of the plan is optional with States and individual members of the industry within the States. The plan is administered in each State by an official State agency cooperating with the Bureau of Animal Industry, United States Department of Agriculture. A list of the official State agencies may be obtained from this Bureau, and the names of members of the industry who are participating may be obtained from the official State agencies.

THE NATIONAL POULTRY IMPROVEMENT PLAN [1]

Prepared by specialists of the Bureau of Animal Industry, in cooperation with poultry leaders, poultry breeders, and members of the breeder and commercial hatchery industry

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ARTICLE 1. GENERAL REGULATIONS

REGULATION 1.—For the purposes of this plan the following words phrases, names, and terms shall be construed, respectively, to mean—

Paragraph 1. **Plan.**—The National Poultry Improvement Plan.

Par. 2. **Official State agency.**—The agency recognized by the Bureau of Animal Industry, United States Department of Agriculture, to cooperate in the administration of the plan within the State. It may be the State department of agriculture, State college of agriculure, State poultry-improvement board or association, or other agency recognized officially by the State government.

Par. 3. **Official State inspector.**—An employee of the official State agency or other agency recognized officially by the State government whose major duties comprise the official inspection of flocks, eggs, chicks, hatcheries, poultry premises, records, and methods employed in carrying on the work of the plan.

Par. 4. **R. O. P. supervisor.**—An employee of the official State agency or other agency recognized officially by the State government whose major duties are to represent the official State agency in its supervision of U. S. R. O. P. (U. S. Record of Performance) work and to vouch for the accuracy of all U. S. R. O. P. records made by authorized U. S. R. O. P. breeders under his jurisdiction.

Par. 5. **R. O. P. inspector.**—An employee of the official State agency or other agency recognized officially by the State government whose major duties are the inspection of flocks and records of U. S. R. O. P. breeders.

[1] The original edition of this plan was issued, in mimeographed form, in September 1935. It has been revised annually in accordance with the changes adopted at the National Poultry Improvement Plan conferences.

Par. 6. **Flock-selecting agent.**—A person who has taken a course of training in standardbred and production judging prescribed by the State college of agriculture or other properly constituted State agency and who has passed an examination and been authorized by the official State agency to do the flock-selection work as provided for in the U. S. Approved, U. S. Verified, and U. S. Certified breeding stages.

Par. 7. **Official pullorum tester.**—A State livestock sanitary authority, an official of the State college of agriculture, or a similarly authorized State employee, who has the training and qualifications necessary to do the pullorum-testing work as provided for in the plan.

Par. 8. **Pullorum-testing agent.**—A person who has taken a course of training in pullorum testing prescribed by the State livestock sanitary authorities or officials of the State college of agriculture and who has passed an examination and been authorized to do the pullorum-testing work as provided for in the U. S. Pullorum-Tested class.

Par 9. **Eggs and hatching eggs.**—Chicken eggs and chicken hatching eggs.

Par. 10. **U. S. R. O. P.**—U. S. Record of Performance.

Par. 11. **U. S. R. O. M.**—U. S. Register of Merit.

Regulation 2.—The official State agency shall direct, supervise, and be responsible for flock selection, testing for pullorum disease, and all other administrative work as provided for in the plan.

Regulation 3.—All inspectors shall be authorized by the official State agency.

Regulation 4.—Poultry laying and breeding houses shall be kept clean and in good condition. The land in the immediate vicinity of the poultry laying and breeding houses shall be kept in sanitary condition.

Regulation 5.—Hatcheries and all incubator equipment shall be kept in strictly sanitary condition.

Regulation 6.—All eggs used in any stage of this plan shall be reasonably uniform in size and shape and sound in shell. In the case of all white-egg breeds, U. S. Approved hatching eggs shall be reasonably free from tints, and eggs of other U. S. breeding stages shall be free from tints.

Regulation 7.—The management of a hatchery participating in the plan shall maintain the identity of hatching eggs being incubated, including those which are being custom-hatched, and shall keep accurate records concerning the name and address of each flock owner; the number of eggs received from each flock owner; the name and address of each purchaser; the number, hatchery grade, if any, breed and variety, and date of shipment of all chicks. These records shall be open for official inspection at all times. Eggs received and chicks hatched shall be subject to inspection at all times.

Regulation 8.—All chicks shall be normal and representative of the breed and variety and at hatching time shall weigh at least 8 pounds net per 100 chicks.

Regulation 9.—Delivery of chicks shall be made in approved types of chick boxes properly ventilated and securely tied, and chicks shall be shipped to reach the ultimate purchaser within the time limit prescribed by the United States Postal Regulations.

Regulation 10.—Chicks and hatching eggs produced under the rules and regulations of the plan shall lose their identity as of the terminology used in the plan when they are purchased for resale by any person, firm, or corporation not participating in the plan.

Regulation 11.—Chicks and hatching eggs of identical U. S. breeding stages and pullorum-control and eradication classes may be exchanged or bought for resale by members of the industry who are participating in the same phases of the plan. Members of the industry may purchase for resale eggs or chicks of a higher stage or class than those which they produce, but such products may not be sold as of the higher stage or class.

Regulation 12.—Any person, firm, or corporation selling hatching eggs of the U. S. stages or classes, other than from the flock or flocks of such person, firm, or corporation, shall not sell hatching eggs from any flock or flocks other than those which are under the supervision of the plan. Adequate records shall be kept and shall at all times be available to the official State agencies concerned. These records shall consist of the names and addresses of all flock owners supplying hatching eggs, the number of females in each breeding flock, and the number of hatching eggs of each breed or variety sold to each purchaser.

Regulation 13.—With the approval of the official State agency, crossbred chicks may be produced and sold by members operating under the plan, provided both males and females in the breeding flocks meet at least the minimum requirements of the U. S. Approved stage, including selection, leg banding, and inspection. Such chicks shall not be designated as of any U. S. breeding stage.

Regulation 14.—When more than one hatchery, whether located within a State or in two or more States, is operated under the same name, ownership, or management, all the said hatcheries must comply with the regulations of the U. S. Approved or higher breeding stages before any one of them may offer for sale U. S. Approved chicks.

Regulation 15.—The use of the official terminology or any portion thereof of any particular breeding stage or pullorum-control and eradication class of the plan in which members of the industry are participating shall be limited to hatching eggs, baby chicks, and breeding stock that meet at least the minimum requirements of that particular stage or class when produced by those under the jurisdiction of the official State agency.

Regulation 16.—Breeding stock and each bundle or package of hatching eggs and chicks sold or offered for sale shall be designated by official labels or tags defining the breeding stage and pullorum-control and eradication class in accord with the regulations of the plan, except that the following shall not be sold or offered for sale under official labels: (*a*) Breeding stock, hatching eggs, and chicks purchased for resale by a nonparticipating person, firm, or corporation (see regulation 10); (*b*) breeding stock, hatching eggs, and chicks consigned for sale; (*c*) sex-separated cockerel chicks to be sold for nonbreeding purposes.

Regulation 17.—All advertising must be in accord with the rules and regulations of the plan and the fair trade practice rules of the Federal Trade Commission for the baby-chick industry. Copies of proposed folders, catalogs, circulars, or other printed literature shall be submitted to and approved by the official State agency before being

printed and distributed. Copies of such literature, after being printed, shall be filed with the official State agency. Copies of all publication advertising shall be mailed to the official State agency at or before the time these advertisements are submitted to the publisher or publishers.

REGULATION 18.—All advertising mentioning blood test or blood testing shall specify the disease tested for and the method used in conducting the test and shall further state under what supervision the test was conducted.

REGULATION 19.—The use of the word "accredited" to indicate breed improvement or disease eradication or control or its use in any other way is prohibited.

REGULATION 20.—The National Poultry Improvement Plan emblem (see cover page) and various designs illustrative of the breeding stages and the pullorum-control and eradication classes (figs. 1 to 8) may be used only by participants who have met the specified requirements.

REGULATION 21.—The selection of birds in a flock to qualify as U. S. Approved, U. S. Verified, or U. S. Certified by an official State inspector shall be regarded as one official flock inspection.

REGULATION 22.—Males to be used in the U. S. Certified and U. S. R. O. P. breeding stages may be dubbed prior to the time they reach 6 months of age, provided each bird has been officially examined and passed in respect to comb disqualifications; such birds must otherwise comply with all regulations pertaining to the qualifications of U. S. R. O. P. males not earlier than 6 months of age. A record of the wing-band numbers of all U. S. R. O. P. male candidates dubbed shall be made and sent to the official State agency by each official State inspector within 10 days after each dubbing is completed.

REGULATION 23.—Any person, firm, or corporation signing a hatchery agreement to participate in the plan shall not purchase, receive, offer for sale, or be a dealer in or agent for breeding stock, hatching eggs, or baby chicks, other than those produced under the plan, without special permission from the official State agency.

REGULATION 24.—When U. S. Pullorum-Tested, U. S. Pullorum-Passed, or U. S. Pullorum-Clean classes of chicks, hatching eggs, flocks, and hatcheries are attained, produced, advertised, or sold by breeders or hatcheries operating as U. S. Approved, U. S. Verified, U. S. Certified, or U. S. R. O. P. in accordance with this plan, the proper description of such flocks, hatcheries, hatching eggs, and chicks shall be, respectively, U. S. Approved, Pullorum-Tested; U. S. Approved, Pullorum-Passed; U. S. Approved, Pullorum-Clean; U. S. Verified, Pullorum-Tested; U. S. Verified, Pullorum-Passed; U. S. Verified, Pullorum-Clean; U. S. Certified, Pullorum-Tested; U. S. Certified, Pullorum-Passed; U. S. Certified, Pullorum-Clean; U. S. R. O. P., Pullorum-Tested; U. S. R. O. P., Pullorum-Passed; or U. S. R. O. P., Pullorum-Clean.

ARTICLE 2. BREEDING STAGES

SECTION 1. U. S. APPROVED BREEDING STAGE

Paragraph 1. **U. S. Approved flocks.**—These flocks shall meet the following requirements:

(*a*) Females shall be rigidly and thoroughly selected once each year for constitutional vigor and for egg production, such selected

females to combine standardbred and production qualities to a reasonably high degree; (*b*) males shall be selected especially for constitutional vigor and standardbred qualities; (*c*) the selection of the flocks shall be approved by an official State inspector.

Par. 2. The method of production judging prescribed by the State college of agriculture or other properly constituted State agency shall serve as the basis for the selection of males and females. All birds to be used in the U. S. Approved flocks shall be selected by an official State inspector or by a flock-selecting agent.

Par. 3. All birds selected for U. S. Approved flocks shall be banded at the time of selection with sealed and numbered leg bands secured through the official State agency. Birds rejected by the official State inspector or by the flock-selecting agent shall have their tails clipped, have their leg bands removed, and be kept separate from the breeding flocks. The selection of birds for a U. S. Approved flock shall be completed at least 20 days before any eggs are saved for hatching purposes, except that this 20-day interval shall not be required if all males found in the flock are approved.

FIGURE 1.—Design authorized to identify U. S. Approved hatching eggs, baby chicks, flocks, and hatcheries.

Par. 4. Before any flock other than one regularly supplying eggs to a U. S. Approved hatchery may be recognized as a U. S. Approved flock, it must be inspected and approved by an official State inspector. Each year at least one-third of the hatchery flocks supplying eggs to a U. S. Approved hatchery shall be inspected and approved by an official State inspector and at least one-third of the flocks selected by each flock-selecting agent must be inspected and approved. The inspection of a flock by an official State inspector shall consist in the physical examination of a sufficient number of males and females to satisfy him that the flock is worthy of approval.

Par. 5. No birds except those with sealed and numbered official leg bands shall be allowed in the breeding flocks, and no male birds shall be allowed in any other mature flock on the same premises except in U. S. Verified, U. S. Certified, or U. S. R. O. P. flocks.

Par. 6. Only one variety shall be kept on a farm unless, where more than one variety is kept, ample provision has been made to keep these varieties and their eggs separate.

Par. 7. **U. S. Approved hatching eggs.**—Such eggs shall come only from U. S. Approved flocks or a higher U. S. breeding stage and shall weigh at least $1^{11}/_{12}$ ounces each.

Par. 8. **U. S. Approved chicks.**—They shall be hatched only from U. S. Approved eggs and in U. S. Approved hatcheries.

Par. 9. **U. S. Approved hatcheries.**—These hatcheries shall be inspected by an official State inspector at least once during the hatching season. They may not hatch for sale or sell hatching eggs and chicks other than those produced under the breeding stages of the plan, except as provided for in regulation 13. Of any one variety, only U. S. Approved and U. S. R. O. P. hatching eggs and chicks shall be hatched for sale or sold. Hatching eggs and chicks of U. S. Verified

or U. S. Certified stages from other varieties may be hatched for sale or sold by a U. S. Approved hatchery.

SECTION 2. U. S. VERIFIED BREEDING STAGE

Paragraph 1. **U. S. Verified flocks.**—These flocks shall fulfill all the requirements of the U. S. Approved flocks and shall be mated to males produced from flock matings of U. S. R. O. P. males and U. S. R. O P. females. For the first 2 years of U. S. R. O. P. work carried on by any breeder, the males for his own flock need not be produced from flock matings of U. S. R. O. P. males and U. S. R. O. P. females, but they must be wing-banded and of equal breeding. The males to be used in U. S. Verified flocks shall be wing-banded at hatching time with sealed, official wing bands in order that the cockerels reared may be identified at the time of inspection by the official State inspector.

FIGURE 2.—Design authorized to identify U. S. Verified hatching eggs, baby chicks, flocks, and hatcheries.

Par. 2. The males and females used in U. S. Verified flocks shall be of at least qualifying standard weight as designated by the official State agency in cooperation with the State college of agriculture or other properly constituted State agency which gives the prescribed training in standardbred and production judging. The birds shall be selected by an official State inspector or by a flock-selecting agent once each year, and all flocks shall be inspected by an official State inspector at least once during the hatching season.

Par. 3. **U. S. Verified hatching eggs.**—Such eggs shall come only from U. S. Verified flocks or a higher U. S. breeding stage and shall weigh at least $1^{11}/_{12}$ ounces each.

Par. 4. **U. S. Verified chicks.**—They shall be hatched only from U. S. Verified hatching eggs and in U. S. Verified hatcheries, except that a hatchery may produce and sell U. S. Verified chicks of one breed or variety and U. S. Approved of another breed or variety, in which case the hatchery shall be recognized as a U. S. Approved hatchery.

Par. 5. **U. S. Verified hatcheries.**—These hatcheries may not hatch for sale or sell hatching eggs and chicks other than U. S. Verified or higher breeding stages, except as provided for in regulation 13. Of any one variety, only U. S. Verified and U. S. R. O. P. hatching eggs and chicks shall be hatched for sale or sold. U. S. Certified hatching eggs and chicks of other varieties may be hatched for sale or sold by a U. S. Verified hatchery. U. S. Verified hatcheries shall be inspected by an official State inspector at least twice during the hatching season.

SECTION 3. U. S. CERTIFIED BREEDING STAGE

Paragraph 1. **U. S. Certified flocks.**—These flocks shall fulfill all the requirements of the U. S. Approved flocks and shall be mated to U. S. R. O. P. males. For the first 2 years of U. S. R. O. P. work carried on by any breeder, the males for his own flock need not be U. S. R. O. P. males but must be individually pedigreed and of breed-

ing which meets the qualifications for U. S. R. O. P. males. All such males may be used in subsequent breeding seasons if reinspected and certified by the official State agency. The males and females shall be of at least qualifying standard weight as designated by the official State agency in cooperation with the State college of agriculture or other properly constituted State agency which gives the prescribed training in standardbred and production judging. The females shall be selected by either an official State inspector or a flock-selecting agent once each year, and all flocks shall be inspected by an official State inspector at least once during the hatching season.

FIGURE 3.—Design authorized to identify U. S. Certified hatching eggs, baby chicks, flocks, and hatcheries.

Par. 2. **U. S. Certified hatching eggs.**—Such eggs shall come only from U. S. Certified flocks and shall weigh at least $1^{11}/_{12}$ ounces each and average at least 24 ounces to the dozen.

Par. 3. **U. S. Certified chicks.**—They shall be hatched only from U. S. Certified eggs and in U. S. Certified hatcheries, except that a hatchery may produce and sell U. S. Certified chicks of one breed or variety and U. S. Approved or U. S. Verified of another breed or variety, in which case the hatchery shall be recognized as of the lowest breeding stage in which chicks are produced.

Par. 4. **U. S. Certified hatcheries.**—These hatcheries may not hatch for sale or sell other than U. S. Certified hatching eggs and chicks, and U. S. R. O. P. hatching eggs and chicks, except as provided for in regulation 13. They shall be inspected by an official State inspector at least twice during the hatching season.

SECTION 4. U. S. RECORD OF PERFORMANCE BREEDING STAGE

Paragraph 1. U. S. Record of Performance embraces records of egg production, egg weight, and body weight made on the breeder's premises under official supervision and similar records made at officially conducted egg-laying contests, State colleges of agriculture, and State and Federal experiment stations, when such records are passed on by the official State agency and when the individual birds meet other U. S. R. O. P. requirements, except that the birds produced by State colleges of agriculture and State and Federal experiment stations may be recognized as U. S. R. O. P. only for the use of U. S. R. O. P. breeders in their breeding work.

FIGURE 4.—Design authorized to identify U. S. R. O. P. hatching eggs, baby chicks, flocks, and hatcheries.

Par. 2. The trap nests used in U. S. R. O. P. work shall be of an approved type and shall be kept in perfect working order at all times. The poultry plant and all egg-production records shall be subject at all times to unannounced inspection by an official State inspector. At the time of each inspection, the inspector shall have sole charge of the trap nests and of eggs laid. No females other than those entered in

U. S. R. O. P. shall be allowed in the pens where U. S. R. O. P. candidates are being trap-nested.

Par. 3. U. S. R. O. P. eggs and chicks may be produced only on a U. S. R. O. P. breeder's premises except that with the approval of the official State agency (*a*) a U. S. R. O. P. breeder may have eggs hatched by any hatchery operating under the plan provided the U. S. R. O. P. breeder does the pedigreeing of the chicks; and (*b*) a U. S. Approved, U. S. Verified, or U. S. Certified hatchery owner may produce U. S. R. O. P. chicks from purchased U. S. R. O. P. eggs for the use of his hatchery-flock owners only, provided proper records of purchases are sent to the official State agency and an official State inspector does the wing banding of these chicks.

Par. 4. When U. S. R. O. P. hatching eggs are transferred from one U. S. R. O. P. breeder to another U. S. R. O. P. breeder or hatcheryman for the purpose of hatching U. S. R. O. P. chicks, the conditions that shall govern such a transaction include the following: (*a*) The U. S. R. O. P. breeder who sells U. S. R. O. P. hatching eggs must send a report in triplicate at the time the eggs are shipped consisting of a list of the eggs sold, the pen and dam number of each egg, and the egg production, average egg weight, and body weight of each dam, to the official State agency of his State. If the eggs are shipped outside the State, these records shall be attested to by the R. O. P. supervisor, who shall retain one copy and mail one copy to the purchaser and one to the official State agency of the State to which the eggs are shipped. (*b*) Within 5 days after incubation has begun, the purchasing U. S. R. O. P. breeder or hatcheryman must submit to his official State agency a list of the U. S. R. O. P. eggs bought. (*c*) Within 5 days after hatching time the U. S. R. O. P. breeder or hatcheryman who purchased the eggs must send to his official State agency a list of the chicks hatched from each dam and their respective wing-band numbers.

Par. 5. When U. S. R. O. P. chicks, cockerels, or mature birds are sold or transferred by members of the industry participating in the plan, the individual making the sale must send a report in triplicate to the official State agency at the time these products are shipped, giving the number of birds sold; the number, egg production, average egg weight, and body weight of each dam; and the pen or leg-band number of the sire of each chick, cockerel, or mature bird. If the chicks, cockerels, or mature birds are shipped outside the State, these records shall be attested to by the R. O. P. supervisor, who shall retain one copy and mail one copy to the purchaser and one to the official State agency of the State to which these products are shipped.

Par. 6. To be eligible for U. S. R. O. P. entry, all females shall have been raised from U. S. R. O. P. or U. S. Certified flocks or other flocks of breeding satisfactory to the official State agency. Eligibility shall be confined to any standard breed or variety or any other breed or variety recognized by the United States Record of Performance Federation.

Par. 7. All birds trap-nested on the premises of a U. S. R. O. P. breeder shall be considered as entered under U. S. R. O. P. supervision with the following four exceptions: (*a*) All qualified U. S. R. O. P. hens may be trap-nested; (*b*) a U. S. R. O. P. breeder may trap-nest certain birds for as long a period as 6 months for the pur-

pose of obtaining progeny-test records on particular families; this additional private trapping is to be conducted only with the knowledge and consent of the official State agency, and the trap-nest records on these birds must at all times be open and available to the R. O. P. supervisor or his inspector; (*c*) he may, with the approval of the official State agency, trap-nest any other breed or variety which he is developing as a basis for future U. S. R. O. P. work; and (*d*) with the approval of the official State agency, hens in their second or subsequent production years may be privately trapped to complete lifetime egg records that were begun before U. S. R. O. P. work was undertaken.

Par. 8. All flocks shall be inspected at least seven times a year. One or more consecutive days of inspection by the R. O. P. inspector shall represent a single inspection. In the event of an outbreak of contagious disease in a poultry plant where U. S. R. O. P. work is carried on, inspection may be temporarily suspended.

Par. 9. **Duties of R. O. P. supervisor.**—The R. O. P. supervisor shall represent the official State agency in its supervision of U. S. R. O. P. work, and he shall vouch for the accuracy of all U. S. R. O. P. records made by authorized U. S. R. O. P. breeders under his jurisdiction. He shall keep on file in his office for at least 5 years, (*a*) a record of all qualified males, with at least one-generation pedigree showing egg records and egg weights of the female ancestors, and (*b*) a record of all qualified females with their egg records and egg weights for their first year of production. He shall also keep on file a record of all U. S. R. O. P. matings and all U. S. R. O. P. chicks with at least one-generation pedigree.

Par. 10. The R. O. P. supervisor, in publishing a summary of the U. S. R. O. P. work under his supervision each year, shall include the following information for each flock:

(*a*) Total number of pullets of that particular breed on the farm;
(*b*) Number of pullets entered in U. S. R. O. P.;
(*c*) Number meeting the U. S. R. O. P. requirements;
(*d*) Percentage of birds entered meeting the U. S. R. O. P. requirements;
(*e*) Number of birds qualifying which lay from 200 to 249 eggs;
(*f*) Number of birds qualifying which lay 250 to 299 eggs;
(*g*) Number of birds qualifying which lay 300 or more eggs;
(*h*) Average egg production of the qualifying birds;
(*i*) Average egg weight of the qualifying birds;
(*j*) Average body weight of the qualifying birds.

Par. 11. The R. O. P. supervisor may bring charges to the official State agency of his State against any U. S. R. O. P. breeder for falsifying records, for unethical conduct in his business methods, or for any other cause which he may consider detrimental to U. S. R. O. P. work. On such charges' being proved in a fair hearing, the offending breeder must be reprimanded or suspended by the official State agency according to the nature of the offense.

Par 12. **Duties of R. O. P. inspector.**—The R. O. P. inspector shall work under the direction of the R. O. P. supervisor. It shall be his duty to visit and inspect the work of each U. S. R. O. P. breeder at least seven times each year, his visit to be unannounced and so timed

that each season of the year shall be represented in his reports. On each visit he shall do the trap-nesting for the day and shall record all eggs and egg weights of all eggs laid by each individual bird entered in U. S. R. O. P. During the breeding season he shall examine all hens in U. S. R. O. P. matings to see that credit for eggs laid is not being given to hens apparently out of production and to see that the birds which constitute these matings are listed with the supervisor. He shall compare the number of eggs being incubated from each hen with the number she is credited with having laid during the corresponding period, and shall have authority to test these eggs for fertility. When the hatch is reported he shall compare his findings with the number of chicks reported hatched and wing-banded. He shall be courteous to breeders at all times but shall be on the alert to discover errors in records or violations of rules, intentional or otherwise. He shall immediately report to the supervisor any suspicious circumstances or appearance of fraud in the records or business dealings of a U. S. R. O. P. breeder.

Par. 13. **U. S. R. O. P. breeder.**—A U. S. R. O. P. breeder is a person operating a poultry-breeding farm in accordance with the provisions of the U. S. R. O. P. breeding stage. Effective September 1, 1941, in addition to his U. S. R. O. P. matings, all other mated birds supplying hatching eggs to him or to any hatchery owned or operated by him shall be under the supervision of the plan in one of the breeding stages.

Par. 14. The flock or flocks of a U. S. R. O. P. breeder must be trap-nested at regular intervals every day throughout the year. He shall send to his supervisor, not later than the tenth day of each month, a complete report of all U. S. R. O. P. egg production records and egg weights for the previous month. The egg production, pedigree, and sales records shall at all times be open to examination by the supervisor or inspector.

Par. 15. **U. S. R. O. P. females.**—Pullets shall have laid 200 or more eggs during the first laying year, which, in the case of birds on the breeders' premises, shall mean 365 days from the time of laying the first egg in a trap nest, provided all first-year records shall end by November 30, except that pullets entered in U. S. R. O. P. after December 1 may be allowed to complete a full year's record, and such records that enable pullets to qualify for U. S. R. O. P. shall be included in the following year's report. In the case of contest pullets, the first laying year shall mean the duration of the official contest year.

Par. 16. In order to qualify for U. S. R. O. P., the eggs of each pullet must have an average weight of at least 24 ounces to the dozen. For 3 successive days each month, beginning 3 months after the laying of the first egg and continuing through the remainder of the bird's laying year, the breeder shall record the weight of each egg laid. In order for yearling and older hens to qualify as U. S. R. O. P., they shall have laid 200 or more eggs during the trap-nest year, which shall mean 365 days from the date of the first egg laid in a trap nest, and the eggs laid shall have an average weight of at least 25 ounces to the dozen. The inspector shall weigh all eggs on each official inspection of the U. S. R. O. P. candidates. An average of all egg weights taken by the breeder and the inspector for each fe-

male during her first trap-nest year, beginning 3 months after the laying of the first egg, shall be her official egg weight.

Par. 17. The U. S. R. O. P. breeder and the R. O. P. inspector shall record the leg-band numbers of all U. S. R. O. P. candidates showing a standard disqualification, laying eggs of undesirable shape, or laying tinted eggs in the case of white-egg breeds. Such birds shall not qualify as U. S. R. O. P. females. The R. O. P. inspector may remove the U. S. R. O. P. leg band from any bird which develops these defects subsequent to qualification.

Par. 18. All females shall be of at least qualifying body weight for hens for each breed or variety as designated in the American Standard of Perfection, allowance being made for the standard weight tolerance except that 3 pounds' tolerance shall be allowed for Plymouth Rocks, Jersey Giants, and breeds in the English and Asiatic classes. The weight of each female entered in U. S. R. O. P. shall be taken by the R. O. P. inspector at least twice between January 1 and August 1, and the average of these weights shall be used for purposes of qualifying for U. S. R. O. P.

Par. 19. All birds meeting the above requirements with respect to egg production, egg weight, eggshell color, egg shape, body weight, and freedom from standard disqualifications shall be considered as having met the requirements for U. S. R. O. P. females. Before such birds may be sold as U. S. R. O. P. females or used in U. S. R. O. P. matings or flock matings of U. S. R. O. P. males and U. S. R. O. P. females, they shall be examined and banded with a U. S. R. O. P. sealed, official leg band.

Par. 20. **U. S. R. O. P. males.**—Males produced from U. S. R. O. P. chicks shall qualify as U. S. R. O. P. males provided they shall have passed the final individual inspection of an official State inspector not earlier than at 6 months of age. Each male passed by an inspector shall possess strong constitutional vigor and be a good representative of the breed or variety, shall be free from standard disqualifications, and shall be banded with a U. S. R. O. P., sealed and numbered official leg band when passed by the inspector. At the time of inspection and banding, the inspector shall make a complete record of the wing- and leg-band numbers of each male banded.

Par. 21. **U. S. R. O. P. matings.**—These matings shall be comprised of only U. S. R. O. P. females mated to a U. S. R. O. P. male. The breeder may place in the U. S. R. O. P. mating females that are not U. S. R. O. P., provided he does not sell pedigreed eggs, chicks, or stock from such females as U. S. R. O. P. products. During the first year of U. S. R. O. P. breeding work carried on by any breeder, the male mated with U. S. R. O. P. females need not be a U. S. R. O. P. male, provided he is of equal pedigree. No eggs or progeny from such a mating shall be sold as U. S. R. O. P. products, except that male offspring produced during the first breeding year may be permitted to head U. S. Certified flocks in the State where produced.

Par. 22. Only one male shall be allowed in a single U. S. R. O. P. mating at any one time, and the date of entry and removal of males shall be properly recorded.

Par. 23. The females shall be trap-nested throughout the breeding season and each egg shall be numbered with the U. S. R. O. P. num-

ber of the female that laid it and the number of the mating. For each female, an accurate record shall be kept of all eggs laid during the breeding season, the number of eggs sold, the number of eggs incubated, and the total number of chicks banded. On request, eggs that do not hatch shall be held for the inspector.

Par. 24. If the eggs are to be incubated to produce U. S. R. O. P. chicks, a report must be made of the number of eggs from each hen, with her pen number, a copy of which must be sent to the supervisor within 5 days after incubation of the eggs has begun.

Par. 25. Birds used in all U. S. R. O. P. matings shall be inspected at least twice during the breeding season.

Par. 26. **U. S. R. O. P. hatching eggs.**—Such eggs offered for sale or used for hatching shall come only from U. S. R. O. P. matings and shall weigh at least 2 ounces each and 25 ounces or more a dozen. Each egg shall bear the U. S. R. O. P. number of the hen that laid it and the number of the mating.

Par. 27. **U. S. R. O. P. chicks.**—They shall come only from U. S. R. O. P. eggs. The chicks from each female shall be hatched separately in pedigree baskets or sacks and shall be banded individually with sealed and numbered official wing bands at the time of removal from pedigree baskets or sacks. An accurate record of all chicks banded shall be furnished the R. O. P. supervisor within 5 days after the date of hatch. The chicks shall be subject to inspection at any time. The bands from dead chicks shall be retained for the information of the inspector and shall be furnished to him on request.

Par. 28. **U. S. R. O. P. candidate matings.**—Females entered in U. S. R. O. P. may be mated to a U. S. R. O. P. male for the purpose of obtaining progeny records a year earlier than would otherwise be possible. The breeder shall send the R. O. P. supervisor a complete report on the birds comprised in this mating, the number of eggs incubated, and the wing-band numbers of the chicks hatched and banded. Sealed and numbered official wing bands shall be used, but these bands shall not be U. S. R. O. P. wing bands. The male progeny of the females which qualify as U. S. R. O. P. females may qualify as U. S. R. O. P. males for use only on the breeder's own premises, provided they meet all the requirements of U. S. R. O. P. males except that of being produced from U. S. R. O. P. chicks.

Par. 29. **Fraud.**—Evidence of fraud in connection with any form of U. S. R. O. P. work, when established by the official State agency after a thorough investigation and hearing, shall bar from further U. S. R. O. P. work, for a period of at least 2 years, the person or persons found to have committed the fraud.

SECTION 5. U. S. REGISTER OF MERIT BREEDING STAGE

Paragraph 1. **U. S. R. O. M. male.**—A U. S. R. O. M. male is a U. S. R. O. P. male which, when mated to U. S. R. O. P. females, has at least one-third of his daughters that are entered in U. S. R. O. P. qualify for U. S. R. O. P. and a minimum of 20 that qualify.

Par. 2. **U. S. R. O. M. female.**—A U. S. R. O. M. female is a U. S. R. O. P. female which, when mated to a U. S. R. O. P. male in an individual pedigree mating, has at least one-third of her daughters that are entered in U. S. R. O. P. qualify for U. S. R. O. P. and a

minimum of four that qualify. The females in U. S. R. O. P. candidate matings which qualify as U. S. R. O. P. may qualify as U. S. R. O. M. through the performance of their daughters.

Par. 3. **A single-star U. S. R. O. M. mating.**—This mating consists of any of the following three combinations: (*a*) U. S. R. O. M. male ×U. S. R. O. P. females which are daughters of a double-star U. S. R. O. M. mating; (*b*) U. S. R. O. M. male×U. S. R. O. P. females which are daughters of a U. S. R. O. M. female; (*c*) U. S. R. O. P. male, which is a son of a U. S. R. O. M. female, × U. S. R. O. M. females.

Par. 4. **A double-star U. S. R. O. M. mating.**—This mating consists of a U. S. R. O. M. male and a U. S. R. O. M. female.

FIGURE 5.—Design authorized to identify U. S. R. O. M. males, females, and matings.

ARTICLE 3. PULLORUM-CONTROL AND ERADICATION CLASSES

SECTION 1. GENERAL PROVISIONS

Paragraph 1. Matters relating to disease shall be under the direction of the livestock sanitary authorities or officials of the State college of agriculture or similarly authorized State agency of the respective States in cooperation with the Bureau of Animal Industry, United States Department of Agriculture.

Par. 2. In order for a flock to qualify as a U. S. Pullorum-Tested flock, the testing of the birds for the pullorum organism shall be done by an official pullorum tester or a pullorum-testing agent. The livestock sanitary authorities, officials of the State college of agriculture, or similarly authorized State employees, under whose supervision the pullorum-testing work is carried on, shall assume responsibility for the accuracy of the testing work done by the pullorum-testing agents.

Par. 3. In order for a flock to qualify as a U. S. Pullorum-Passed or U. S. Pullorum-Clean flock, the testing of the birds for the pullorum organism shall be done by an official pullorum tester.

Par. 4. Birds may not be added to U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks except after the approval of the official State agency. Birds from only U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks may be added to U. S. Pullorum-Passed flocks, and only birds from U. S. Pullorum-Clean flocks may be added to U. S. Pullorum-Clean flocks. The number of birds and the name and address of the person from whom the purchase is to be made shall be furnished the official State agency. In moving birds from one farm to another, due precaution should be taken to use clean, sanitary coops.

Par. 5. The official test for pullorum disease in the National Poultry Improvement Plan shall be one of the following agglutination tests:

(*a*) The standard tube agglutination test, as described in the Proceedings of the United States Live Stock Sanitary Association, November 30 to December 2, 1932, pages 487 to 491;

(*b*) The stained-antigen, rapid, whole-blood test,[2] as described by Schaffer, MacDonald, Hall, and Bunyea, in the Journal of the American Veterinary Medical Association, volume 79 (n. s. 32), No. 2, pages 236–240, 1931, and covered by U. S. Patent 1,816,026;

(*c*) The rapid serum test, as described by Runnells, Coon, Farley, and Thorp, Journal of the American Veterinary Medical Association, volume 70 (n. s. 23), No. 5, pages 660–662, 1927.

(For convenience of reference the essential features of the three tests are reprinted in the appendix of this plan on p. 21.)

Par. 6. In the control of pullorum disease on any farm or poultry plant, all chickens over 4 months of age to be used as breeders, in the case of flocks qualifying as U. S. Pullorum-Tested and U. S. Pullorum-Clean, and all chickens over 4 months of age, in the case of flocks qualifying as U. S. Pullorum-Passed, must be tested for pullorum disease by means of one of the three official tests. Reactors must be removed from the premises on the completion of the test, and the premises must be immediately carefully cleaned and disinfected to the satisfaction of the official State agency.

Par. 7. The stained antigen used in the whole-blood testing [see Par. 5 (*b*)] for pullorum disease shall be approved by the Bureau of Animal Industry, United States Department of Agriculture.

Par. 8. In the event that subsequent tests of U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks reveal reactors, the official State agency shall have the right to request the owner to submit all the reactors for autopsy and bacteriological examination, and in case such autopsy and bacteriological examination fail to reveal any evidence of pullorum infection the flock shall be considered to have been free of pullorum disease.

Par. 9. The custom hatching of eggs from non-U. S. Pullorum-Tested flocks is permitted in U. S. Pullorum-Tested hatcheries, provided the incubation and hatching of such eggs are done in a separate room. The custom hatching of eggs from flocks of a lower pullorum-control class than U. S. Pullorum-Passed is not permitted on the premises of a U. S. Pullorum-Passed hatchery. The custom hatching of eggs from flocks of a lower pullorum-control class than U. S. Pullorum-Clean is not permitted on the premises of a U. S. Pullorum-Clean hatchery.

Par. 10. In separating a room for the use of two or more incubators, to provide for custom hatching, a tight partition is absolutely necessary and must be provided. Outside ventilation and an outside entry for each room are required. Any door or opening between the two rooms must be sealed, as by weather stripping and locking, or by battening the cracks around the door in the room where eggs from non-U. S. Pullorum-Tested flocks are being incubated or hatched. All incubators used for hatching U. S. Pullorum-Tested, U. S. Pullorum-Passed, or U. S. Pullorum-Clean chicks must be thoroughly cleaned and disinfected by spraying or fumigation after each hatch, by means of an officially recognized method.

Par. 11. In the case of U. S. Pullorum-Passed and U. S. Pullorum-Clean flocks, all birds which are returned to the premises from poultry exhibits or egg-laying contests or which have been removed from the premises for any purpose whatsoever, shall be quarantined

[2] Complete information on this method of testing is contained in Miscellaneous Publication No. 349, The Use of the Rapid, Whole-Blood Test.

for at least 30 days and officially tested at the time of their return and again at least 30 days later, and any reactors shall be removed immediately after each test.

SECTION 2. U. S. PULLORUM-TESTED CLASS

Paragraph 1. **U. S. Pullorum-Tested flocks.**—These flocks shall meet the following requirements: (*a*) All chickens over 4 months of age to be used as breeders shall be tested for pullorum disease under the supervision of an official State agency and contain fewer than 10 percent of reactors, the last test being made within 12 months immediately preceding the date of sale of hatching eggs or chicks from such flocks; (*b*) all indicated carriers of pullorum disease shall be removed from the premises on completion of the test and disposed of in a manner satisfactory to the official State agency; (*c*) all birds remaining in the flock shall be properly leg-banded; (*d*) individual birds introduced into U. S. Pullorum-Tested flocks shall have passed, within 12 months, a negative official test for pullorum disease.

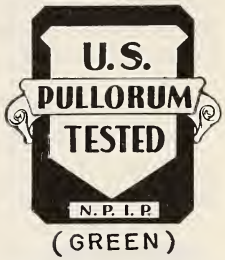

FIGURE 6.—Design authorized to identify U. S. Pullorum-Tested hatching eggs, baby chicks, flocks, and hatcheries.

Par. 2. A flock containing 10 percent or more of reactors on the first test, on being retested at intervals of not less than 30 days, and all reactors removed after each test until the percentage of reactors is less than 10, may qualify as a U. S. Pullorum-Tested flock.

Par. 3. **U. S. Pullorum-Tested hatching eggs.**—Such eggs are from U. S. Pullorum-Tested flocks.

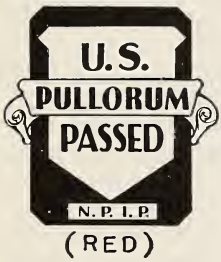

FIGURE 7.—Design authorized to identify U. S. Pullorum-Passed hatching eggs, baby chicks, flocks, and hatcheries.

Par. 4. **U. S. Pullorum-Tested chicks.**—These are hatched from eggs produced by U. S. Pullorum-Tested, U. S. Pullorum-Passed, or U. S. Pullorum-Clean flocks, in a U. S. Pullorum-Tested hatchery.

Par. 5. **U. S. Pullorum-Tested hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood chicks from only U. S. Pullorum-Tested, U. S. Pullorum-Passed, or U. S. Pullorum-Clean flocks, except that custom hatching may be carried on as prescribed in article 3, section 1, paragraph 10.

SECTION 3. U. S. PULLORUM-PASSED CLASS

Paragraph 1. **U. S. Pullorum-Passed flocks.**—These flocks shall meet the following requirements: (*a*) All chickens over 4 months of age shall be tested for pullorum disease under the supervision of an official State agency and contain no reactors, the last test being made within the testing year immediately preceding the date of sale of hatching eggs or chicks from such flocks; (*b*) all pullorum tests of flocks of this class, or flocks that are candidates for this class, must be reported to the official State agency, and reactors occurring in

unofficial tests shall be considered on the same basis as any reactors in official tests.

Par. 2. **U. S. Pullorum-Passed hatching eggs.**—Such eggs are from U. S. Pullorum-Passed flocks.

Par. 3. **U. S. Pullorum-Passed chicks.**—These are hatched from eggs produced by U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks, in a U. S. Pullorum-Passed hatchery.

Par. 4. **U. S. Pullorum-Passed hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood chicks from U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks only.

SECTION 4. U. S. PULLORUM-CLEAN CLASS

Paragraph 1. **U. S. Pullorum-Clean flocks.**—These flocks shall meet the following requirements: (*a*) All chickens over 4 months of age to be used as breeders shall be tested for pullorum disease under the supervision of an official State agency and contain no reactors in two consecutive tests not less than 6 months apart, the last test being made within the testing year immediately preceding the date of sale of hatching eggs or chicks from such flocks, provided in the first one of these two consecutive tests the flock shall have met all the requirements of a U. S. Pullorum-Passed flock; (*b*) once a flock is established as U. S. Pullorum-Clean it remains so as long as no reactors are found in the official annual test of birds used as breeders; (*c*) all pullorum tests of flocks of this class or flocks that are candidates for this class must be reported to the official State agency, and reactors occurring in unofficial tests shall be considered on the same basis as any reactors in official tests; (*d*) a flock developed exclusively from purchased hatching eggs produced by a U. S. Pullorum-Clean flock and hatched in a U. S. Pullorum-Clean hatchery may be recognized as a U. S. Pullorum-Clean flock in one annual test conducted under the supervision of an official State agency if no reactors are found.

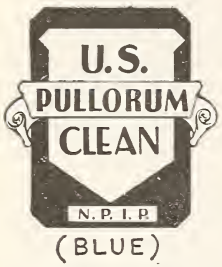

FIGURE 8.—Design authorized to identify U. S. Pullorum-Clean hatching eggs, baby chicks, flocks, and hatcheries.

Par. 2. If not more than 0.5 percent of a flock and, in any case, not more than six birds in the flock, which in the previous year or years had a U. S. Pullorum-Clean rating, are found to be positive on any test for pullorum disease, a retest of all birds to be used as breeders may be made at the discretion of the official State agency not earlier than 30 days or later than six weeks after the first test. If the retest reveals no reactors the flock may again be declared to be U. S. Pullorum-Clean.

Par. 3. **U. S. Pullorum-Clean hatching eggs.**—Such eggs are from U. S. Pullorum-Clean flocks.

Par. 4. **U. S. Pullorum-Clean chicks.**—These are hatched from eggs produced by U. S. Pullorum-Clean flocks in a U. S. Pullorum-Clean hatchery.

Par. 5. **U. S. Pullorum-Clean hatcheries.**—These hatcheries operate under the supervision of an official State agency and hatch eggs or brood chicks from U. S. Pullorum-Clean flocks only.

SUMMARY OF THE NATIONAL POULTRY IMPROVEMENT PLAN

OBJECTIVES OF THE PLAN

To improve the production and breeding qualities of poultry.

To reduce the mortality of chicks from pullorum disease.

To identify authoritatively breeding stock, hatching eggs, and chicks, with respect to quality, by describing them in terms uniformly accepted in all parts of the United States.

To serve as a means through which scientific research may be applied for the improvement of poultry and poultry products.

GENERAL FEATURES OF THE PLAN

The plan is Nation-wide in scope. Participation is optional on the part of the States and members of the industry within the States.

Five progressive breeding stages and three progressive pullorum-control classes are provided.

Minimum requirements are established for each breeding stage and each pullorum-control class.

The breeding and the pullorum-control work may be carried on independently of each other if the official State agency in question approves. However, it is recommended that both phases be followed simultaneously.

The plan is administered in each State by an official State agency in cooperation with the Federal Bureau of Animal Industry.

Official inspections are made by official State inspectors who are employees of official State agencies.

To meet the requirements of the plan, all persons who do flock-selecting and pullorum-testing work must be authorized by the official State agency.

Flock-selecting agents and pullorum-testing agents are individuals who have qualified under the supervision of an official State agency to perform flock-selecting and pullorum-testing work respectively.

Only standardbred birds are eligible to qualify as breeding stock.

All birds used for breeders are to be selected annually and are to be identified with sealed leg bands obtained through the official State agency.

The premises and the equipment of participating flock owners and hatcherymen are to be kept in sanitary condition.

Under certain restrictions hatchery products may be exchanged or bought for resale by those who are participating in the plan.

The official terminology of the plan is limited to those who are participating in its provisions. When both the breeding and the pullorum-testing phases of the program are followed a combination of terms with the prefix U. S. is provided.

Breeding stock and hatchery products offered for sale are to be designated by official labels or tags.

Accurate records are to be kept by participating breeders and hatcherymen concerning certain details of their operations.

All advertising is to be submitted to and approved by the official State agency.

BREEDING STAGES OF THE PLAN

U. S. APPROVED BREEDING STAGE

This breeding stage provides for U. S. Approved flocks, U. S. Approved hatching eggs, U. S. Approved chicks, and U. S. Approved hatcheries.

Both males and females are to be selected for constitutional vigor and for standardbred and production qualities and banded by either State inspectors or flock-selecting agents.

At least one-third of the flocks supplying eggs to a hatchery are to be inspected and approved by an official State inspector if and when the breeders are selected and banded by flock-selecting agents.

Hatching eggs are to weigh at least $1\frac{11}{12}$ ounces each.

Each hatchery is to be inspected at least once during the hatching season by an official State inspector.

U. S. VERIFIED BREEDING STAGE

This breeding stage provides for U. S. Verified flocks, U. S. Verified hatching eggs, U. S. Verified chicks, and U. S. Verified hatcheries.

The males are to be from U. S. Record of Performance flock matings.

Both males and females may be selected by either State inspectors or flock-selecting agents.

All flocks are to be inspected and verified at least once during the hatching season by an official State inspector.

Hatching eggs are to weigh at least $1\frac{11}{12}$ ounces each.

Each hatchery is to be inspected at least twice during the hatching season by an official State inspector.

U. S. CERTIFIED BREEDING STAGE

This breeding stage provides for U. S. Certified flocks, U. S. Certified hatching eggs, U. S. Certified chicks, and U. S. Certified hatcheries.

The males are to be from U. S. Record of Performance individual matings.

The females may be selected by either official State inspectors or flock-selecting agents.

All flocks are to be inspected and certified at least once during the hatching season by an official State inspector.

Hatching eggs are to weigh at least $1\frac{11}{12}$ ounces each and average at least 24 ounces a dozen.

Each hatchery is to be inspected by an official State inspector at least twice during the hatching season.

U. S. RECORD OF PERFORMANCE BREEDING STAGE

This breeding stage provides for U. S. R. O. P. flocks, U. S. R. O. P. eggs, U. S. R. O. P. chicks, and U. S. R. O. P. breeding stock.

The females are to be trap-nested and, to qualify, must lay 200 or more eggs in 1 year. Detailed records are to be kept on all operations.

The males are to come from hens which have laid 200 or more eggs in 1 year.

Both males and females are to be free of standard disqualifications and to comply with standard weight requirements.

Eggs during the first year of laying are to weigh on an average at least 24 ounces to the dozen and thereafter average 25 ounces a dozen.

All flocks are to be inspected by an R. O. P. inspector at least seven times during the year.

All chicks are to be individually pedigreed and wing-banded at hatching time.

U. S. REGISTER OF MERIT BREEDING STAGE

In this most advanced breeding stage recognition is given only to U. S. R. O. P. males and U. S. R. O. P. females whose progeny excel in performance.

A U. S. R. O. M. male must have at least one-third of his daughters that are entered and a minimum of 20 that qualify as U. S. R. O. P. females.

A U. S. R. O. M. female must have at least one-third of her daughters that are entered and a minimum of four that qualify as U. S. R. O. P. females.

PULLORUM CONTROL AND ERADICATION

METHOD OF TESTING

Any one of the following methods may be used in testing chickens for pullorum disease:

(*a*) The standard tube agglutination test.
(*b*) The stained-antigen, rapid, whole-blood test.
(*c*) The rapid serum test.

U. S. PULLORUM-TESTED CLASS

All chickens over 4 months of age to be used as breeders are to be tested by an official pullorum tester or a testing agent and the reactors removed from the premises. Each flock must contain fewer than 10 percent of reactors.

The testing work must be done within the 12 months immediately preceding the date of sale of hatching eggs or chicks.

All chickens introduced into the breeding flock must likewise have been tested and be negative to the tests.

Eggs from nontested flocks are not to be incubated in the same machine or in the same room with eggs from U. S. Pullorum-Tested flocks.

Chicks from nontested flocks are not to be hatched or brooded in the same machine or in the same room with chicks from U. S. Pullorum-Tested flocks.

U. S. PULLORUM-PASSED CLASS

All chickens over 4 months of age are to be tested by a livestock sanitary authority, an official of the college of agriculture, or a similarly authorized State employee.

The flock must not contain reactors on the last test made within the testing year immediately preceding the date of sale of hatching eggs, chicks, or breeding stock.

Birds introduced into the flock must be from U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks.

No eggs other than from U. S. Pullorum-Clean flocks are to be incubated in the same incubator or in the same room with eggs from U. S. Pullorum-Passed flocks.

No chicks other than from U. S. Pullorum-Clean flocks are to be hatched or brooded in the same machine or in the same room with chicks from U. S. Pullorum-Passed flocks.

U. S. PULLORUM-CLEAN CLASS

All birds over 4 months of age to be used as breeders are to be tested annually by a livestock sanitary authority, an official of the college of agriculture, or a similarly authorized State employee.

The flock must not contain reactors in two consecutive tests not less than 6 months apart, the last test being made within the testing year immediately preceding the date of sale of hatching eggs, chicks, or breeding stock.

Birds introduced into the flock must be from only U. S. Pullorum-Clean flocks.

Eggs from nontested, U. S. Pullorum-Tested, or U. S. Pullorum-Passed flocks are not to be incubated in the same incubator or in the same room with eggs from U. S. Pullorum-Clean flocks.

Chicks from other flocks are not to be hatched or brooded in the same machine or in the same room with chicks from U. S. Pullorum-Clean flocks.

APPENDIX

OFFICIAL TESTING FOR PULLORUM DISEASE

For the benefit of active workers in laboratory and field, the essential portions of the original articles describing the three recognized methods of testing are herein reprinted verbatim.[2]

THE STANDARD TUBE AGGLUTINATION TEST

(Thirty-sixth Annual Meeting of the United States Live Stock Sanitary Association; Report of the Conference of Official Research Workers in Animal Diseases, II. Serological Diagnosis of Pullorum Disease; Jour. Amer. Vet. Med. Assoc. 82 (n. s. 35): 488–490, 1933).

Collection and delivery of blood samples.—The blood samples shall be taken by properly qualified and authorized persons only, and in containers provided by the diagnostic laboratory or other authorized agent. The containers should be stout-walled test-tubes, preferably ⅜ by 3 inches, without lip, or small well-selected medicine vials, which have been thoroughly cleaned, and dried in a hot-air drying-oven. The tubes are accompanied by selected cork stoppers which, unless new, have been washed and thoroughly boiled or scalded, and dried. All birds must be officially leg-banded with bands supplied by the control agency.

The blood is procured by making a small incision in the large median wing vein, with a small sharp lancet, and allowing the blood to run into the tube, or by the use of a small syringe (with 20- or 21-gage needle) which is properly cleansed between bleedings with physiological saline solution. From 1½ to 2 cc. of blood should be collected. The tubes are corked and laid on their sides in order to allow the blood to solidify in a long slant. After the tubes have completely clotted, they are packed and shipped by mail (special delivery), rapid express, or by messenger, to the laboratory. All labeling must be clear and permanent, and may be done with a suitable pencil on etched portions of the tubes, or by means of fast-gum labels.

The blood samples must reach the laboratory in a fresh and unhemolyzed condition. Hemolyzed samples should be rejected. It is imperative, therefore, to cool the tubes immediately after slanting and clotting, and unless they reach the laboratory within a few hours, to pack them with ice in special containers, or by some other cooling system which will insure their preservation during transportation. In severe cold seasons, extreme precaution must be exercised to prevent freezing and consequent laking. The samples must be placed in cold (5° to 10° C.) storage immediately upon arrival at the laboratory.

Preparation of antigen.—The antigen shall consist of three representative strains of *S. pullorum* which are of known, high agglutinability, but are not sensitive to negative and to nonspecific sera. They are grown on agar having the following composition:

Water	1,000 cc.
Difco beef extract	4 gm. (0.4 percent).
Difco Bacto-peptone	10 gm. (1.0 percent).
Dry granular agar (Difco)	20 gm. (2.0 percent).

Reaction-pH 6.8 to 7.2.

Large 1-inch test tubes, kolle flasks or Blake bottles are streaked liberally over the entire agar surface with inoculum from *48-hour slant-agar cultures* prepared from the stock cultures of the selected strains.[3] Frequent resort to the stock cultures is highly desirable, in order to maintain the purity of the

[2] By permission of the editor of the Journal of the American Veterinary Medical Association.

[3] The stock cultures are maintained by transferring to new sloped agar at least once a month and keeping at 18° to 25° C. (average room temperature) in a dark closet or chest, following incubation for from 24 to 36 hours at 37° C. The purity of the stock cultures should be checked at definite intervals by microscopic examination of Gram-stained slides.

antigen, and to allow *long rest intervals for the organisms.* A second intermediate culture may be necessary at times to furnish luxuriant growths for the final transfers. The antigen-growing tubes or bottles are incubated 48 hours at 37° C. and the surface growth washed off with sufficient phenolized (0.5 percent) saline (0.85 percent) solution to make a heavy suspension or very light paste. The washings are filtered through lightly packed absorbent cotton placed in the apex of the funnel. The washings of the three separate strains are now combined in equal volume-density and stored in the refrigerator (5° to 10°) in tightly stoppered bottles.

The dilute antigen to be used in the routine testing is prepared from the stock antigen by dilution of the latter with physiological (0.85 percent) saline (C. P.)[4] solution containing 0.3 percent of phenol (Merck's blue or silver label brand), to a turbidity corresponding to 0.75–1.00 on the McFarland nephelometer scale. The hydrogen-ion concentration of the dilute antigen is corrected to pH 8.2 to 8.5 by the addition of dilute sodium hydroxide. In this narrow range thymol blue used as indicator (5 or 6 drops of the standard stock dilution added to from 5 to 6 cc. of the diluted antigen in ⅝-inch test tubes) imparts a dirty green to greenish-blue color to the tube. Cresol red (7.2 to 8.8) also may be employed. The color reaction should be checked frequently by comparison with standard buffer solutions, with the use of the comparator block, or by the potentiometer method. New dilute antigen should be prepared each day and kept cold.

The diluted antigen is employed in 2-cc. quantities in 4-inch by ½-inch test tubes or 1-cc. quantities in smaller tubes in which the final serum-antigen mixtures are made and incubated. The distribution of the antigen in the tubes may be accomplished by the use of long burettes, or special filling devices made for the purpose.

Serum dilutions, incubation, etc.—Either of two dilutions of the test sera may be employed, namely 1:25 or 1:50.[5] The 1:25 dilution, when used, shall serve as a finding dilution, and shall not be used to condemn a flock which has been placed on a * * * (pullorum-clean) list, or the immediate progeny of a * * * (pullorum-clean) flock, unless at autopsy the organism is found, or there is complete agglutination in dilutions of at least 1:50. In all official reports on the blood test the serum dilutions shall be indicated. The sera are introduced into the agglutination tubes in the desired amounts with well-cleaned serological pipettes or special serum-delivery devices which do not permit of the mixing of different sera.[6] The antigen and serum are well mixed before incubation.

Interpretation of results.—The results shall be recorded as:

N, or —, when the tube remains uniformly turbid, and there is no distinct settling of antigen.

P, or +, when there is a distinct clumping of the antigen, and the liquid between and above the agglutinated particles is clear. The reaction should be full 4+.

S, or ?, when the agglutination is only partial or incomplete (1+ to 3+). The reactions may be recorded as slightly suspicious, S or ?, or strongly suspicious, *S* or ?.

M, or missing, when samples listed on the original record sheet are missing.

H, or hemolyzed, when the blood samples were hemolyzed and unsatisfactory for the test.

B, or broken, when the sample tubes are broken on arrival, and no serum is obtained.

Some allowance must always be made for differences in the sensitiveness of different antigens and different set-ups, and therefore a certain amount of independent intelligent judgment must be exercised at all times. Also the histories of the flocks require consideration.

Preparation of the nutrient agar for antigen production.—Dissolve 20 gm. of dry Difco agar in 1,000 cc. of water, by heating for 15 to 20 minutes in a pressure sterilizer at 15 pounds' extra pressure. Add to the hot agar solution 4 gm. of Difco beef extract and 10 gm. of Difco Bacto-peptone. Test the reaction and adjust to as near pH 7.0 (6.8 to 7.2) as possible with dilute NaOH or HCl, as may be required. Heat for 10 to 15 minutes in the autoclave.

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[4] The sodium chloride should be of tested purity.

[5] There is much difference of opinion whether 1:25 or 1:50 should be the minimum dilution, and considerable research must be done before a final agreement can be reached.

[6] Where serological pipettes (graduated in 1/100 cc.) are employed, a separate pipette should be used for each serum. Care must be exercised at all times to prevent the laking of the red corpuscles with water.

Filter, if necessary, through absorbent cotton in funnel, and fill into large tubes, special flasks or bottles.[7] Sterilize by autoclaving for 20 to 25 minutes at 15 pounds' extra pressure.[8] If partly purified or refined agar (preferably granular) is employed, the hot liquid medium should filter readily through the cotton, and be ready for tubing. Clarification with egg white or whole egg is necessary only when a poor or crude grade of agar is used. Stock nutrient agar should be kept away from sunlight and dust, and in a cool place.

THE STAINED-ANTIGEN, RAPID, WHOLE-BLOOD TEST

(Schaffer, MacDonald, Hall, and Bunyea. Jour. Amer. Vet. Med. Assoc. 79 (n. s. 32) : 236-240. 1931.)

NOTE.—The description of the preparation of the antigen is not herein reprinted because that product is produced only under license from the Secretary of Agriculture in accordance with specific directions.

The loop method.—The loop method is carried out as follows: At the end of a 2½-inch length of nichrome wire (Brown and Sharp gage No. 24[9]) a loop three-sixteenths of an inch in diameter is made. For convenience the wire is inserted into a small cork stopper which serves as a handle. It has been found that the blood can be measured rapidly and with sufficient accuracy by use of the wire loop. Such a loop when filled with blood, so that the blood appears to bulge out, delivers 0.02 cc. The antigen is measured by means of a medicine dropper whose tip is adjusted to deliver 0.05 cc. when operated in the vertical position. By this means, the proportion of antigen to blood is kept between the limits of 2 to 1 and 3 to 1, which has been found to give the most satisfactory results. A drop of stained antigen is placed on the glass plate. A loopful of blood is taken up from the wing vein. When submerged in the blood and then carefully withdrawn, the loop comes away properly filled. On looking down edgewise at the filled loop, one observes that the blood appears to bulge out. The loopful of blood is then stirred into the drop of antigen and the mixture spread to a diameter of about 1 inch. The loop is then rinsed in clean water and dried by touching it to a piece of clean blotting paper, if necessary.

The glass plate is rocked from side to side a few times to mix the antigen and blood thoroughly, and to facilitate agglutination. The reaction is usually visible in from 5 seconds to 2 minutes. Slight reactions, which require more than 2 minutes, should as a rule be disregarded.

Various degrees of reaction are observed in this as in other agglutination tests. The greater the agglutinating power of the blood the more rapid the clumping and the larger the clumps. A positive reaction consists of a clumping of the antigen in well-developed violet flocculi surrounded by clear spaces. This reaction is easily distinguished against a white background. A somewhat weaker reaction consists of small but still clearly visible clumps of antigen surrounded by spaces only partially clear. The interpretation of these partial reactions should be the same as that of similarly incomplete "tube method" agglutination reactions. Between this point and a negative reaction there sometimes occurs a very fine granulation barely visible to the naked eye; this should be disregarded in making a diagnosis.

The very fine marginal flocculation which may occur just before drying up is also regarded as negative. In a nonreactor the smear remains homogeneous. A glass plate about 15 inches square providing space for 48 tests has proved satisfactory for this work. The use of the plate enables the tester to have a number of successive test mixtures under observation without holding up the work to wait for results before proceeding to the next bird. As a result of more than a year of experience in testing with this antigen, it has been decided to regard as definitely positive only those reactions which appear within 1 minute after mixing the antigen and blood, while those which appear more slowly are regarded as suspicious.

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[7] If the ingredients dissolve completely and the reaction needs no adjustment, the second heating and the filtering may be omitted.

[8] When Blake bottles or Kolle flasks are used for growing the antigen, an additional heating for 5 minutes is desirable.

[9] Experience has indicated that nichrome wire (Brown and Sharp gage No. 24) is too flexible for practical field use. Any noncorrosive wire (Brown & Sharp gage No. 20) looped around a No. 20 steel drill or around a tenpenny nail is sufficiently rigid and provides a standard amount of blood for the rapid, whole-blood test.

THE RAPID SERUM TEST

(Runnells, Coop, Farley, and Thorp. Jour. Amer. Vet. Med. Assoc. 70 (n. s. 23) : 660–662. 1927.)

Preparation of antigen, rapid method.—One strain of *Bacterium pullorum* is grown on nutrient agar (pH 7.5) for 48 to 72 hours, washed off with a very small amount of a 12 percent solution of sodium chloride containing 0.5 percent of phenol, filtered through glass wool to remove clumps of bacteria and of media and adjusted so that its turbidity is 50 times greater than tube 0.75 of McFarland's nephelometer.

Setting up tests, rapid method.—The tests are run on glass, ruled off in inch squares. The glass forms the top of a box in which is a frosted electric-light bulb that furnishes light and heat. The interior of the box is painted black. Two serum-antigen dilutions are used for each sample. The amount of antigen in each case is 0.02 cc. This amount of the concentrated antigen is equivalent to 1 cc. of the antigen diluted to correspond to tube 0.75 of McFarland's nephelometer. Since this is the amount and turbidity of the antigen employed in the slow method, the two tests are placed on the same basis as regards antigen. The serum used is in 0.02-cc. and 0.01-cc. amounts. Therefore, the serum-antigen dilutions are equivalent to 1–50 and 1–100 in the slow method. The serum and antigen are placed a short distance apart in the squares and are mixed thoroughly with a toothpick. With positive sera agglutination usually takes place immediately. Occasionally a serum-antigen mixture is found that requires nearly 5 minutes for complete flocculation to occur. When this kind occurs the reaction can be hastened by agitation with a toothpick.

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